

Claims

What is claimed is:

1. A method for transmitting geographic locations of a mobile object to a principal entity over a wireless communications system, comprising:

sending a full position transmission comprising absolute latitude and longitude coordinates of a first position of the mobile object to the principal entity;

determining a second position of the mobile object and whether the second position is within a geographic area that includes the first position;

if the second position is within the geographic area, sending a delta position transmission to the principal entity comprising a numeric value representing longitude and latitude coordinates of the second position relative to the previously transmitted absolute coordinates of the first position; and

if the second position is outside the geographic area, sending a full position transmission comprising absolute latitude and longitude coordinates of the second position to the principal entity.

2. The method of claim 1, wherein the geographic area is a predetermined size based on the capacity of the wireless communications system.

3. The method of claim 2, wherein the predetermined size of the geographic area is determined by calculating the largest geographic area in which a geographic position can

be expressed as a relative position to previously transmitted absolute coordinates using a maximum bit value of the wireless communications system's most succinct message.

4. The method of claim 1, wherein the geographic area is a predetermined size based on a portion of the capacity of the wireless communications system that is allocated for position data.

5. The method of claim 1, wherein the geographic area is centered at the previously transmitted absolute coordinates of the first position.

6. The method of claim 1, further comprising receiving absolute longitude and latitude coordinates via a GPS receiver in the mobile object.

7. The method of claim 6, further comprising determining whether a set of coordinates received via the GPS receiver is the first set of coordinates received within a continuous period of sequential asynchronous location identification.

8. The method of claim 7, wherein if the set of coordinates received from the GPS receiver is the first set of coordinates received within the period, sending a full position transmission of the absolute coordinates of the mobile object to the principal entity.

9. The method of claim 1, wherein the wireless communications system supports a message having a data payload allocated for position data of less than forty-one bits.

10. The method of claim 1, wherein the geographic area is independent of a constant reference geographic location.
11. The method of claim 1, wherein the geographic area is independent of a fixed geographic reference point.
12. A method for efficient transmission of geographic locations of a mobile object to a principal entity over a wireless communications system, comprising:
 - receiving absolute latitude and longitude coordinates of the mobile object at a first position;
 - determining whether the absolute coordinates are the first coordinates received during a continuous period of sequential asynchronous location identification;
 - if the coordinates are the first coordinates received during the period, sending a full position transmission comprising the absolute coordinates to the principal entity and establishing a geographic area centered at the absolute coordinates and having a predetermined size;
 - if the coordinates are not the first coordinates received during the period, determining whether the absolute coordinates are within a previously established geographic area centered at previously transmitted absolute coordinates and having a predetermined size;
 - if the coordinates are within the previously established geographic area, sending a delta position transmission to the principal entity comprising a numeric value

representing longitude and latitude coordinates of the first position relative to previously transmitted absolute coordinates; and

if the coordinates are outside the previously established geographic area, sending a full position transmission comprising the absolute coordinates to the principal entity and establishing a geographic area centered at the absolute coordinates and having a predetermined size.

13. The method of claim 12, wherein the predetermined size of a geographic area is based on the capacity of the wireless communications system.

14. The method of claim 12, wherein the predetermined size of a geographic area is based on a portion of the capacity of the wireless communications system that is allocated for position data.

15. The method of claim 12, wherein the wireless communications system supports a message having a data payload allocated for position data of less than forty-one bits.

16. The method of claim 12, wherein the geographic area is independent of a constant reference geographic location.

17. The method of claim 12, wherein the geographic area is independent of a fixed geographic reference point.

18. The method of claim 12, wherein the numeric value of the delta position transmission and the previously transmitted absolute coordinates are used by the principal entity to calculate the absolute coordinates of the mobile object at the first position.

19. The method of claim 12, wherein the predetermined size of the geographic area is determined by calculating the largest geographic area in which a geographic position can be expressed as a relative position to previously transmitted absolute coordinates using a maximum bit value of the wireless communications system's most succinct message.